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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,461

05/27/2009

Jun Taketatsu

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EXAMINER

GONZALEZ, HIRAM E

ART UNIT

PAPER NUMBER

2835

MAIL DATE

DELIVERY MODE

08/19/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,461	Applicant(s) TAKETATSU ET AL.	
	Examiner HIRAM E. GONZALEZ	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Drafts, Person's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :5/26/2011, 9/20/2010, 10/16/2009, 3/11/2009, 11/13/2208, 10/24/2007, 9/13/2007, 11/30/2006, 7/7/2006.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5-13, 15, 18, 21-38, 41, 42, 47, and 48 are rejected under 35

U.S.C. 103(a) as being unpatentable over Fukuzawa et al. US 5,162,087.

Regarding Claims 1-3, Fukuzawa et al. teaches:

- an adhesive composition and covered particles (elements 1 & 3, Fig. 2),
- conductive particles (elements 7 & 9, Fig. 1) with portions of their surfaces covered by insulating fine particles (element 15, Fig. 1),
- wherein said conductive particles have nuclei comprising a polymer (element 7, Fig. 1; column 7, lines 64-68).

The recitation that "a first circuit member having a plurality of first circuit electrodes...second circuit member having a plurality of electrodes..." has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951).

Fukuzawa et al. does not teach wherein the mass of said insulating fine particles constitutes 2/1000 to 26/1000 or 7/1000 to 86/1000 (or specific gravity of 97/100 to 99/100) of the mass of said conductive particles.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have different ranges for the mass ratios of the insulating particles to the conductive particles, since it has been held that where the general conditions of a claim are disclosed in the prior art (column 13, lines 22-31), discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding Claims 5, 21, and 22, Fukuzawa et al. discloses the claimed inventions except for wherein the mean particle size of said insulating fine particles is 1/40 to 1/10 of the mean particle size of said conductive particles.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have different ranges for the mean particle sizes, since it has been held that where the general conditions of a claim are disclosed in the prior art (column 9, lines 26-32), discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding Claims 6, 23, and 24, Fukuzawa et al. teaches wherein said insulating fine particles comprise a polymer of a radical polymerizing substance (column 9, lines 19-25).

Regarding Claims 7, 25, and 26, Fukuzawa et al. teaches wherein said adhesive composition comprises a radical polymerizing substance and a curing agent

Art Unit: 2835

which generates free radicals in response to heating (column 9, lines 19-25; column 11, lines 6-18).

Examiners note: It is known in the art that polymerization processes involve free radicals.

Regarding Claims 8, 27, and 28, Fukuzawa et al. teaches which further comprises a film-forming material comprising a phenoxy resin (column 9, lines 12-14).

Regarding Claims 9, 29, and 30, Fukuzawa et al. teaches wherein said phenoxy resin has a molecular structure derived from a polycyclic aromatic compound in the molecule (column 9, lines 12-14).

Regarding Claims 10, 31, and 32, Fukuzawa et al. teaches wherein said polycyclic aromatic compound is fluorine (column 9, lines 12-14).

Regarding Claims 11, 33 and 34, Fukuzawa et al. teaches a circuit connecting material according to claim 1 formed into a film (column 11, lines 21-23).

Regarding Claims 12, 35 and 36, Fukuzawa et al. teaches a cured circuit connecting material according to claim 1, and said first circuit electrodes and said second circuit electrodes are electrically connected through said covered particles (column 18, lines 49-57).

Regarding Claims 13, 37 and 38, Fukuzawa et al. discloses the claimed invention except for wherein, when a direct current voltage of 50 V is applied between adjacent circuit electrodes, the resistance value between said adjacent circuit electrodes is $10^9 \Omega$ or greater.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a voltage of 50 V applied to adjacent electrodes and resistance value of $10^9 \Omega$, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding Claims 15, 41, and 42, Fukuzawa et al. discloses the claimed invention except for wherein the connection resistance between said first circuit electrodes and said second circuit electrodes is no greater than 1Ω .

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a connection resistance between the first and second electrode not be greater than 1Ω , since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding Claims 18, 47, and 48, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)

Claims 14, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuzawa et al. US 5,162,087 in view of Komatsu et al. JP 3112011 A.

Regarding Claims 14, 39, and 40, Fukuzawa et al. discloses the claimed invention except for wherein at least one of said first and second circuit members is an IC chip.

However, Komatsu et al. teaches of anisotropic conductive material used to connect electrodes from a substrate to an IC chip (Abstract).

It would have been obvious to one having ordinary skill in the art at the time of invention to have one of the circuit elements in Fukuzawa et al. be an IC chip, since the use of IC chips for multiple purposes is common in the art.

Claims 4, 16, 19, 20, 43, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuzawa et al. US 5,162,087 in view of Sugiyama et al. US 4,999,460.

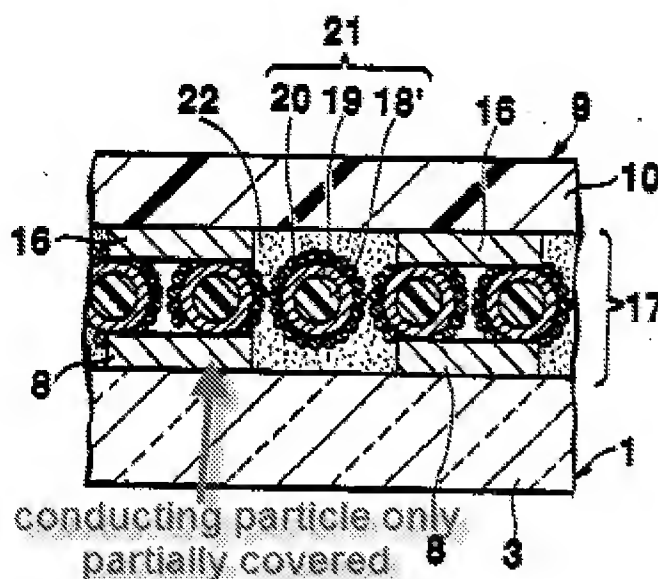
Regarding Claims 4, 19, and 20, Fukuzawa et al. in view of Sugiyama et al. discloses the claimed invention except for wherein in said covered particles, 5 to 60% of the surfaces of said conductive particles are covered by said insulating fine particles.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have range of coverage by the insulating fine particles, since it has been held that where the general conditions of a claim are disclosed in the prior art

Art Unit: 2835

(Sugiyama et al. Fig. 11, see below), discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding Claims 16, 43, and 44, Fukuzawa et al. discloses the claimed



invention except for wherein at least one of said first and second circuit electrodes comprises an electrode surface layer comprising at least one material selected from the group consisting of gold, silver, tin, platinum group metals and indium tin oxide.

However, Sugiyama et al. teaches of a transparent electrode made with indium tin oxide (column 5, lines 5-7).

It would have been obvious to one having ordinary skill in the art at the time of invention to use indium tin oxide or other metals as electrodes in Fukuzawa et al. for their conductive properties and in the case of indium tin oxide for their transparency and use in liquid crystal displays.

Claims 17, 45, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuzawa et al. US 5,162,087 in view of Hozoji et al. US 7,393,771.

Regarding Claims 17, 45, and 46, Fukuzawa et al. discloses the claimed invention except for wherein at least one of said first and second circuit members comprises a board surface layer comprising at least one compound selected from the group consisting of silicon nitride, silicone compounds and polyimide resins.

However, Hozoji teaches of a circuit board member wherein one of the surfaces has silicone nitride.

It would have been obvious to one having ordinary skill in the art at the time of invention to have the board surfaces in Fukuzawa et al. have a layer of silicon nitride for its insulating properties and low coefficient of thermal expansion.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Oh et al. US 7,169,332, which teaches of an insulated conductive ball for anisotropic conductive connections.

Art Unit: 2835

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIRAM E. GONZALEZ whose telephone number is (571)270-1557. The examiner can normally be reached on Monday - Thursday 9:00-5:50.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thompson can be reached on 571-272-2342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HIRAM E GONZALEZ/
Examiner, Art Unit 2835

/Timothy J Thompson/
Supervisory Patent Examiner, Art Unit 2835